



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/815,458

04/01/2004

Derek Chiou

2390.2010-001

6400

21005 7590 07/27/2007  
HAMILTON, BROOK, SMITH & REYNOLDS, P.C.  
530 VIRGINIA ROAD  
P.O. BOX 9133  
CONCORD, MA 01742-9133

EXAMINER

MOORE JR, MICHAEL J

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

07/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/815,458

Applicant(s)

CHIOU ET AL.

Examiner

Michael J. Moore, Jr.

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statements (IDS) submitted on 5/9/05 and 11/17/04 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statements.

### *Drawings*

2. Replacement drawings were received on 10/22/04. These drawings are acceptable and have been entered.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims **1, 2, 4, 6, 7, and 9-14** are rejected under 35 U.S.C. 102(e) as being anticipated by Mittal et al. (U.S. 7,035,212) (hereinafter "Mittal"). *Mittal* teaches all of the limitations of the specified claims with the reasoning that follows.

Regarding claim **1**, "a method of delivering a data packet from a source node to a destination node connected by several paths" is anticipated by the packet forwarding between a source port and destination port via switch fabric (has several paths) using the end to end forwarding architecture shown in Figure 1A.

“Providing packet queues at the source node, each queue associated with at least one path” is anticipated by the ingress queues (source packet queues) shown in Figure 2 each having an associated ingress flow ID as spoken of on column 4, lines 13-17.

“Selecting a packet queue based on local information indicative of the state of paths” is anticipated by the queuing of packets for output to the switch fabric 22 based on Class of Service consideration as spoken of on column 2, line 62 – column 3, line 15.

“Moving the packet into the selected packet queue” is anticipated by the writing of an incoming packet into ingress memory according to the ingress flow ID as spoken of on column 4, lines 31-38.

Lastly, “moving the packet from the selected packet queue through one of the at least one path associated with the selected packet queue” is anticipated by the outputting of a packet to the switch fabric 22 as spoken of on column 2, lines 58-61.

Regarding claim 2, “wherein the selecting of a packet queue depends on whether there is another packet queue containing less data” is anticipated by the traffic manager controller 40 of Figure 2 that tracks the total number of packets received (current packet queue data) for each ingress flow ID and determines when to schedule packets of the corresponding queues for outputting to the switch fabric 22 as spoken of on column 4, line 63 – column 5, line 6.

Regarding claim 4, “wherein the selecting of a packet queue depends on whether the amount of data in the queue is over a limit amount for the queue” is anticipated by traffic manager controller 40 that monitors for ingress flow backups and directs discard

Art Unit: 2616

of packets of a particular ingress flow ID when a number of packets for the flow ID reaches a threshold value (limit amount) as spoken of on column 5, lines 16-24.

Regarding claim 6, “wherein the selecting of a packet queue depends on the priority assigned to the queue and the depths of all the queues” is anticipated by the queuing of packets for output to the switch fabric 22 on a per flow basis and/or a per Class of Service basis (priority) as spoken of on column 2, line 62 – column 3, line 3.

Regarding claim 7, “wherein the selecting of an emergency packet queue depends on whether the amount of data in non-emergency packet queues is over a limit amount” is anticipated by traffic manager controller 40 that monitors for ingress flow backups and directs discard of packets of a particular ingress flow ID when a number of packets for the flow ID reaches a threshold value (limit amount) as spoken of on column 5, lines 16-24.

Regarding claim 9, “providing destination packet queues at the destination node” is anticipated by the egress queues (destination packet queues) at the egress side (destination node) shown in Figure 3.

“Attaching to each data packet a destination packet queue identifier” is anticipated by the attaching of an egress flow ID (destination packet queue identifier) to the header of an outgoing packet as spoken of on column 2, lines 57-59, as well as column 3, lines 18-20.

“Placing the packets into the destination packet queues” is anticipated by the storing of an incoming packet by egress memory hub 26 into egress memory 24 as spoken of on column 3, lines 19-20.

Lastly, “after extracting a first packet from its destination packet queue, extracting a second packet from the destination packet queue identified by the destination packet queue identifier attached to the first packet” is anticipated by the egress memory hub 26 that reads packets from egress memory 24 using the corresponding egress flow ID (destination packet queue identifier) as spoken of on column 3, lines 29-35.

Regarding claim **10**, “providing destination packet queues at the destination node” is anticipated by the egress queues (destination packet queues) at the egress side (destination node) shown in Figure 3.

“Before a data packet arrives at the destination node, attaching an epoch identifier to the data packet” is anticipated by the attaching of an egress flow ID (epoch identifier) to the header of an outgoing packet as spoken of on column 2, lines 57-59, as well as column 3, lines 18-20.

Lastly, “determining that a packet has been lost based on an unexpected change in the epoch identifier” is anticipated by the dropping of packets having a particular egress flow ID if the number of packets or length of the egress flow ID (epoch identifier) gets too large (unexpected change) as spoken of on column 6, lines 16-19.

Regarding claim **11**, “wherein data packets are source routed from the source node” is anticipated by the ingress memory hub 18 that attaches an egress flow ID and forwarding label to the header of an outgoing packet and then outputs the packet to switch fabric 22 as spoken of on column 2, lines 57-61.

Regarding claim **12**, “a method of re-sequencing data packets arriving at a node on a network” is anticipated by the egress side packet reception and processing shown in Figure 3.

“Providing packet queues at the node” is anticipated by the egress queues (packet queues) at the egress side (node) shown in Figure 3.

“Attaching to each data packet a queue identifier” is anticipated by the attaching of an egress flow ID (queue identifier) to the header of an outgoing packet as spoken of on column 2, lines 57-59, as well as column 3, lines 18-20.

“Placing the packets into the queues” is anticipated by the storing of an incoming packet by egress memory hub 26 into egress memory 24 as spoken of on column 3, lines 19-20.

Lastly, “after extracting a first packet from its queue, extracting a second packet from the queue identified by the queue identifier attached to the first packet” is anticipated by the egress memory hub 26 that reads packets from egress memory 24 using the corresponding egress flow ID (destination packet queue identifier) as spoken of on column 3, lines 29-35.

Regarding claim **13**, “associating each output queue with a path through the network to the node from a source node” is anticipated by egress queues at the egress side shown in Figure 3 that each have an associated egress flow ID corresponding to packet forwarding labels indicating paths through the switch fabric as spoken of on column 2, lines 31-35, as well as column 3, lines 18-20.

Regarding claim **14**, “before a data packet arrives at the node, attaching an epoch identifier to the data packet” is anticipated by the attaching of an egress flow ID (epoch identifier) to the header of an outgoing packet as spoken of on column 2, lines 57-59, as well as column 3, lines 18-20.

Lastly, “determining that a packet has been lost based on an unexpected change in the epoch identifier” is anticipated by the dropping of packets having a particular egress flow ID if the number of packets or length of the egress flow ID (epoch identifier) gets too large (unexpected change) as spoken of on column 6, lines 16-19.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).



Art Unit: 2616

7. Claims **3, 5, and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mittal et al. (U.S. 7,035,212) (hereinafter "Mittal") in view of Sharma et al. (U.S. 7,123,623) (hereinafter "Sharma").

Regarding claims **3, 5, and 8**, *Mittal* teaches the methods as described above. *Mittal* does not teach the selecting of a packet queue depending on time stamps attached to packets in the queue.

However, *Sharma* teaches a high-speed switching system using input/output queuing where data is read from the buffer according to a time stamp 306 in the packet header as shown in Figure 3 and spoken of on column 5, lines 27-30.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the time stamp teachings of *Sharma* with the queuing teachings of *Mittal* in order to regulate the order of reading data from the buffer according to age of the data as spoken of on column 5, lines 27-30 of *Sharma*.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sarkinen et al. (U.S. 7,151,744) as well as Khacherian et al. (U.S. 6,542,507) are other references considered pertinent to this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571) 272-3168. The examiner can normally be reached on Monday-Friday (7:30am - 4:00pm).

Art Unit: 2616

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing F. Chan can be reached at (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Moore, Jr.  
Examiner  
Art Unit 2616

mjmMM

  
WING CHAN 7/19/07  
SUPERVISORY PATENT EXAMINER